2005 JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY

IV B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS

POWER SYSTEM OPERATION &CONTROL

(ELECTRICAL&ELECTRONICS ENGINEERING)

NOVEMBER 2005

TIME: 3 HOURS

MAX MARKS: 80

Answer any FIVE Questions
All Questions carry equal marks
? ? ? ? ?

1. Explain the problem of scheduling hydro thermal power plants. What are the constraints in the problem? [16]

2. (a) Describe the need for co-ordination of different power stations.

(b) What are Bmn coefficients and derive them.
[8+8]

3. Using dynamic programming method, how do you find the most economical combination of the units to meet a particular load demand? [16]

4. Discuss the computational procedure for the gradient method to obtain optimal power flow solution without inequality constraints. [16]

5. (a) Write notes on
i. Control area concept.
ii. Area control error.
(b) Explain proportional plus integral control for load frequency control for a single area system.
[4+4+8]

6. Draw the block diagram for two-area load frequency control with integral controller blocks, and explain each block. [16]

7. A long transmission line has the constants A = 0.97 1 < 20, B = 84 < 750 find
the additional reactive power requirement at the receiving end to meet a load of 63
MW at 0.8 p.f. lagging, when both the sending end and receiving and voltages are
to be maintained at 132 kV. [16]

8. A load is supplied through a 275 kV link of total reactance 50
from an infinite
busbar at 275 kV . Plot the receiving -end voltage against power graph for a constant
load power factor of 0.95 lagging. The system resistance may be neglected.